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Claims:

1. A method for inducing the production of eukaryotic cells containing exogenous nucleic acid sequences, said method comprising the step of contacting
5 target cells with a transformation composition comprising submucosal tissue of a warm-blooded vertebrate and an exogenous nucleic acid sequence, under conditions conducive to the proliferation of said target cells.
2. The method of claim 1, wherein the
10 submucosal tissue is intestinal submucosa comprising the tunica submucosa delaminated from the tunica muscularis and at least the luminal portions of the tunica mucosa of warm-blooded vertebrate intestine.
3. The method of claim 1, wherein the step of
15 contacting cells is conducted *in vivo* and comprises the step of implanting the transformation composition into a host vertebrate species.
4. The method of claim 1, wherein the
transformation composition is in an injectable form and is
20 injected into a host to contact host cells.
5. The method of claim 1, wherein the
transformation composition comprises a nucleic acid sequence and intestinal submucosal tissue consisting essentially of the tunica submucosa, the muscularis mucosa
25 and stratum compactum of the intestine of a warm-blooded vertebrate.
6. The method of claim 1, wherein the exogenous nucleic acid sequence is selected from the group consisting of an RNA sequence or a DNA sequence.
- 30 7. The method of claim 6, wherein the exogenous nucleic acid sequence is an antisense nucleic acid sequence.
8. The method of claim 6, wherein the exogenous nucleic acid sequence is circular.

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9. The method of claim 6, wherein the nucleic acid sequence comprises a gene operably linked to regulatory sequences for expressing the gene in the target cells.

5 10. The method of claim 6, wherein the DNA sequence comprises a sequence encoding antisense RNA operably linked to regulatory sequences for expressing the encoded antisense RNA in a eukaryotic cell.

10 11. The method of claim 9, wherein the transformation composition is implanted or injected in a vertebrate host to induce the production of host cells containing the DNA sequence, wherein said DNA sequence encodes a host-deficient cellular product.

15 12. The method of claim 10, wherein the transformation composition is implanted or injected into a vertebrate host to induce the production of host cells containing the DNA sequence.

20 13. The method of claim 2, wherein the intestinal submucosa comprises the tunica submucosa, the muscularis mucosa and the stratum compactum of the tunica mucosa of a segment of small intestine of a warm-blooded vertebrate, said tunica submucosa, muscularis mucosa and stratum compactum being delaminated from the tunica muscularis and the luminal portion of the tunica mucosa of
25 said segment.

14. A composition comprising submucosal tissue of a warm-blooded vertebrate and a nucleic acid.

30 15. The composition of claim 14, wherein the submucosal tissue is intestinal submucosa comprising the tunica submucosa delaminated from the tunica muscularis and at least the luminal portions of the tunica mucosa of warm-blooded vertebrate intestine.

16. The composition of claim 15, wherein said nucleic acid comprises a DNA sequence encoding a gene for a

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biofunctional protein operably linked to regulatory sequences for expressing the gene in a eukaryotic cell.

17. The composition of claim 15, wherein said nucleic acid sequence is circular.

5 18. The composition of claim 17, wherein said circular nucleic acid sequence is a plasmid.

19. The composition of claim 15, wherein the intestinal submucosa consists essentially of the tunica submucosa and basilar tissue of the tunica mucosa of the
10 intestine of a warm-blooded vertebrate.

20. The composition of claim 15 in injectable form.

21. The composition of claim 20, wherein the intestinal submucosa is solubilized by partial hydrolysis.

15 22. A method of preparing the composition of claim 14, said method comprising the steps of contacting the submucosal tissue with a solution of the nucleic acid sequence.

23. The method of claim 22, further comprising
20 the step of desiccating the submucosal tissue prior to contacting the tissue with the nucleic acid sequence solution.

24. An *in vivo* transformation composition comprising a DNA sequence and intestinal submucosal tissue,
25 said intestinal tissue comprising the tunica submucosa and the basilar tissue of the tunica mucosa of vertebrate small intestine, wherein the DNA sequence encodes at least one gene operably linked to regulatory sequences for expressing the gene in eukaryotic cells.

30 25. The transformation composition of claim 21, wherein said nucleic acid sequence is circular.

26. The transformation composition of claim 25, wherein said circular nucleic acid sequence is a plasmid.

27. An injectable, non-immunogenic tissue graft
35 comprising comminuted or solubilized submucosal tissue in

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combination with a DNA sequence encoding a gene for a biofunctional protein.

28. A method for inducing the production of eukaryotic cells containing exogenous nucleic acid sequences, said method comprising the step of contacting
5 target cells with a transformation composition comprising a vertebrate derived collagenous matrix and an exogenous nucleic acid sequence, under conditions conducive to the proliferation of said target cells.

10 29. The transformation composition of claim 28, wherein said nucleic acid sequence is a plasmid.

30. The method of claim 28, wherein the exogenous nucleic acid sequence is an antisense nucleic acid sequence.

15 31. The method of claim 28, wherein the nucleic acid sequence comprises a gene operably linked to regulatory sequences for expressing the gene in the target cells.

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